

**IB705**

**VIA CN400**

**5.25-inch SBC**

# **USER'S MANUAL**

**Version 1.0**

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# Introduction

## Product Description

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The IB705 SBC features CN400 advanced digital media chipset and highly efficient VIA processors on board with up to 1.4GHz processor speed.

Designed for the digital entertainment, automotive and mobile markets, the board integrates the S3 Graphics UniChrome Pro IGP graphics core that features Chromotion CE Video Display engine with hardware MPEG-2 and MPEG-4 acceleration. With the FastStream memory controller and 1GB/s high-speed interface to VIA's feature-leading South Bridge options, it comes with two DDR400 memory sockets supporting a robust shared memory architecture and up to 2GB memory size.

Furthermore, IB705 supports an impressive range of high-speed storage and networking connectivity options such as two Serial ATA ports, six USB 2.0 ports, onboard 10/100Mbps Ethernet controller and Realtek 8110S Gigabit Ethernet. Other advanced features of this 5.25-inch disk-size SBC are four serial ports, watchdog timer, digital I/O, PCI and PCI+ interface.

### Features of IB705

- Onboard VIA Eden / C3 processors
- Up to 1.4GHz, 133/200MHz FSB
- DDR DIMM x 2, max. 2GB
- Onboard 10/100 and Realtek 8110S Gigabit Ethernet
- Integrated VIA CN400 CRT VGA, 24-bit LVDS
- 2 x SATA, 6 x USB 2.0, 4 x COM, Digital I/O
- Watchdog timer, CF socket, PCI slot, PC104+ interface

### **Checklist**

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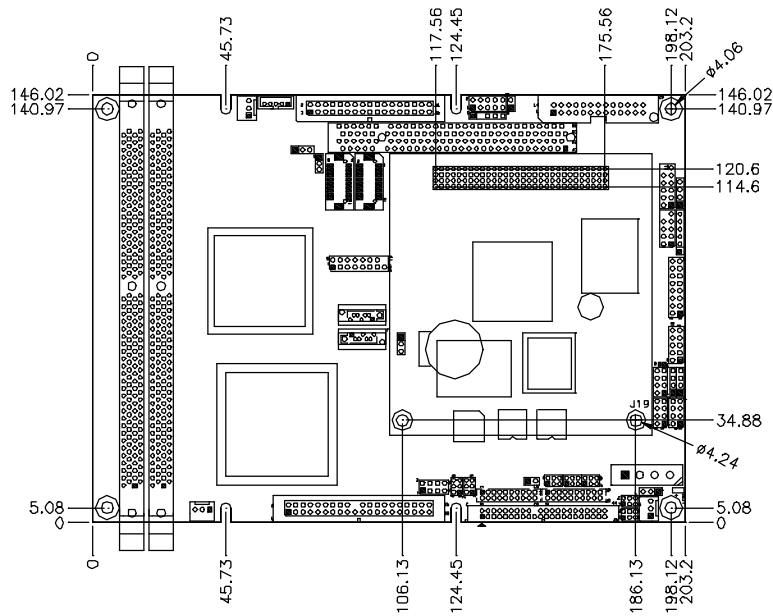
Your IB705 package should include the items listed below.

- The IB705 Embedded Board
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Optional cables such as:
  - 1 FDD Ribbon Cable
  - 1 Audio Cable
  - 2 IDE Ribbon Cables (40-pin & 44-pin)
  - 1 COM Port Cable
  - 1 Printer Port Cable
  - 1 PS/2 Keyboard/Mouse Cable
  - 1 VGA Cable
  - ID240 Ethernet cable kit
  - Single USB Port Cable Bracket

## Specifications

Product Name	IB705
Form Factor	5.25" Little Board (SBC)
CPU Type	VIA EDEN EBGA / C3 EBGA
CPU Voltage	1.05V ~ 1.20V
CPU FSB	100/133/200MHz
CPU Frequency	300MHz ~ 1.4GHz
Green / APM	APM1.2
Chipset	North bridge: CN400 681-pin HSBGA South bridge: VT8237 539-pin PBGA
BIOS	Award BIOS supports ACPI function
Cache	128K/64K (CPU integrated)
Memory	184-pin DDR200/266/333/400 DIMM socket x2, supports up to 2GB max.
VGA	VIA CN400 built-in 128-bit Unichrome Pro 3D/2D controller Supports 16/32/64 MB frame buffer size
LCD (LVDS)	VIA VT1631 Support 24bit Dual Channel LVDS
MPEG-2 & MPEG-4 Hardware	CN400 built-in, Slice Layer, IDCT & Motion Compensation MPEG-4 acceleration
LAN	1.VIA VT8237 built-in 10/100 LAN MAC + VT6103 PHY 2.RTL8110S-32 Gigabit LAN controller
USB	VIA VT8237 built-in USB Version 2.0, supports 6 ports
Serial ATA	VIA VT8237 built-in SATA controller, supports 2 ports & RAID 0, 1
IDE	VIA VT8237 built-in Two Channels Ultra DMA 33/66/100/133
Audio	VIA VT8237 built-in Audio controller + AC97 Codec ALC 655 5.1 Channel (Line-out, Line-in & Mic.)
LPC I/O	Winbond W83697HF: Parallel port x1, COM1 (RS-232), COM2 (RS232/422/485), FDC 1.44MB, Hardware Monitor (3 thermal inputs, 6 voltage monitor inputs & 3 fan headers)
Secondary I/O	Fintek F81216D for COM3, 4 (RS-232)
RTC/CMOS	VIA VT8237 built-in RTC with on board Lithium Battery
KB/Mouse	VIA VT8237 built-in PS/2 Keyboard/Mouse Controller
Expansion Slots	PCI slot x 1 (supports 2 bus masters) PC104+ Connector x1 (PCI only) Compact Flash Type II on IDE2
On Board Connector / Header	Serial ATA connector x 2 40 pins box-header x 1 (IDE1) 44 pins box-header x 1 (IDE2) 34 pins box-header x 1 for Floppy 26 pins box-header x 1 for Printer 16 pins pin-header x 1 for VGA/CRT 5x2 pins pin-header x 1 for LAN1 8x2 pins pin-header x 1 for LAN2 10x2 pins pin-header x 2 for COM1~4 6x2 pins pin-header x 1 for audio 5x2 pins pin-header x 1 for KB/Mouse 4x2 pins pin-header x 3 for USB0~5 4x2 pins pin-header for power switch, reset, power LED etc.
Digital I/O	4 In and 4 Out (TTL level)
Power Connector	4-pin AT power connector
Watchdog Timer	Yes (256 segments: 0, 1, 2,..., 255 sec/min)
Board Size	203mm x 146mm

**Board Dimensions**





## **Installations**

This section provides information on how to use the jumpers and connectors on the IB705 in order to set up a workable system. The topics covered are:

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## Installing the Memory (DIMM)

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The IB705 Embedded Board supports two DDR memory sockets for a maximum total memory of 2GB in DDR memory type. The memory module capacities supported are 64MB, 128MB, 256MB, 512MB and 1GB. The following table lists the supported DDR DIMM configurations.

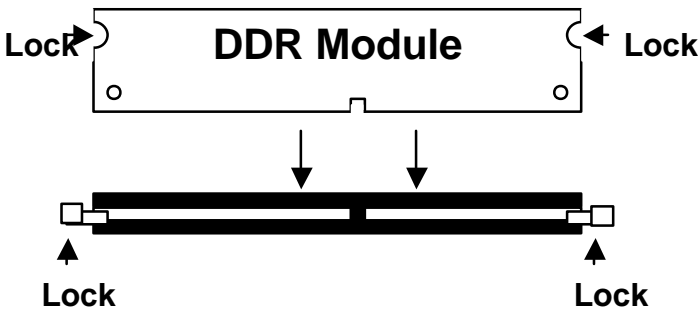
### Supported DDRM DIMM Configurations.

Density	64 Mbit		128Mbit		256Mbit		512Mbit	
Device Width	X8	X16	X8	X16	X8	X16	X8	X16
Single/Double	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS	SS/DS
184-pin DDR	64/128MB	32MB/NA	128/256MB	64MB/NA	256/512MB	128MB/NA	512/1024M	256MB/NA

### Installing and Removing Memory Modules

To install the DDR modules, locate the memory slot on the embedded board and perform the following steps:

1. Hold the DDR module so that the key of the DDR module aligns with those on the memory slot.
2. Gently push the DDR module in an upright position until the clips of the slot close to hold the DDR module in place when the DDR module touches the bottom of the slot.
3. To remove the DDR module, press the clips with both hands.



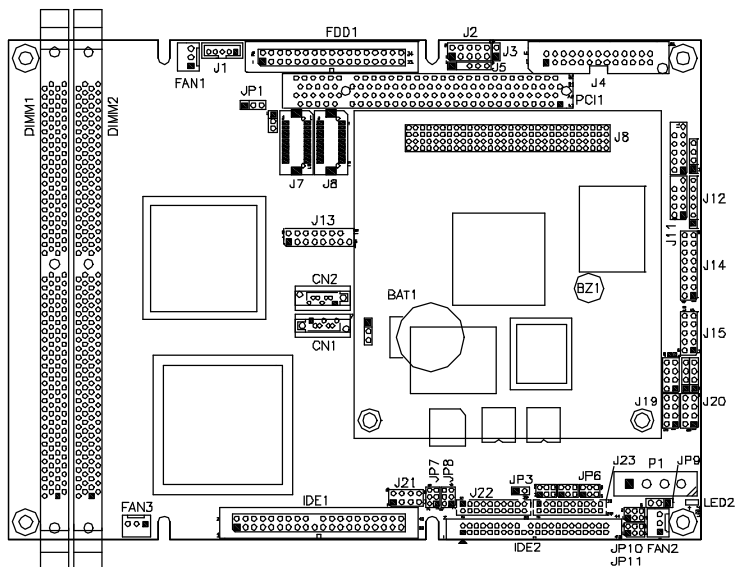
# Setting the Jumpers

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Jumpers are used on IB705 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB705 and their respective functions.



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JP9: AT / ATX Power Selection.....	10

## Jumper Locations on IB705





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

**JP1: LCD Panel Power Selection**

JP1	Setting	Power
 1 2 3	Pin 1-2 Short/Closed	3.3V
 1 2 3	Pin 2-3 Short/Closed	5V

**JP2: Single / Dual Channel LCD Panel Selection**

JP2	Setting	Channel
 1 2 3	Pin 1-2 Short/Closed	Dual
 1 2 3	Pin 2-3 Short/Closed	Single

**JP3: CF Socket Slave/Master Selection**

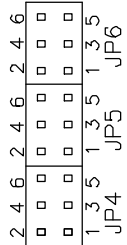
JP3	Setting	CF Socket
 1 2	Open	Slave
 1 2	Close	Master

**JP4, JP5, JP6: RS232/422/485 (COM2) Selection**


COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings for COM2 selection.

	COM2 Function	RS-232	RS-422	RS-485
	Jumper Setting (pin closed)	JP6: 3-5 & 4-6	JP6: 1-3 & 2-4	JP6: 1-3 & 2-4
		JP5: 3-5 & 4-6	JP5: 1-3 & 2-4	JP5: 1-3 & 2-4
		JP4: 1-2	JP4: 3-4	JP4: 5-6

**JP7, JP8, JP10, JP11: COM1/2/3/4 RS232 +5V / +12V Power Setting**

Pin #	Signal Name		Signal Name	Pin #
1	RI		+12V	2
3	RI(default)		RI(default)	4
5	RI		+5V	6



COM1 Settings: Pin 5-6 short = +5V, Pin 1-2 short = +12V

COM2 Settings: Pin 5-6 short = +5V, Pin 1-2 short = +12V

COM3 Settings: Pin 5-6 short = +5V, Pin 1-2 short = +12V

COM4 Settings: Pin 5-6 short = +5V, Pin 1-2 short = +12V

**JP9: AT / ATX Power Selection**

JP9	Setting	Power
	Pin 1-2 Short/Closed	ATX
	Pin 2-3 Short/Closed	AT

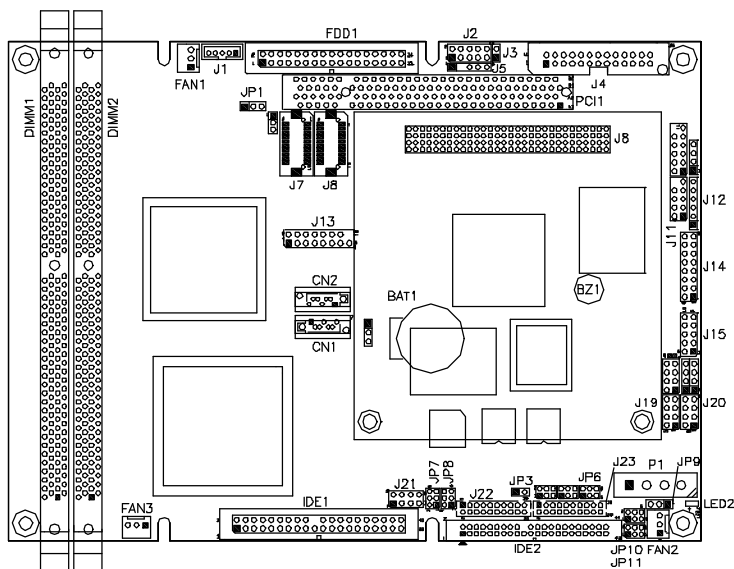
## **Connectors on IB705**

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The connectors on IB705 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IB705 and their respective functions.

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## Connector Locations on IB705



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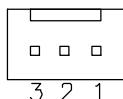


### CN1, CN2: Serial ATA Connector

The SATA connectors support serial ATA 150. Each connector can only use one serial ATA hard disk. CN2 is port 1 and CN1 is port 2.

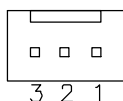
### CN3: Compact Flash Card Type II Connector

### Fan1, Fan3: System and CPU Fan Power Connector



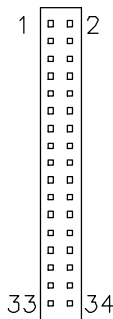
Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

### Fan2: ATX Power Connector

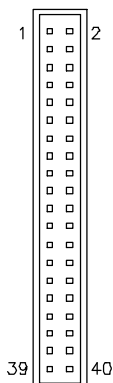


Pin #	Signal Name
1	Ground
2	PS_On
3	5VSB

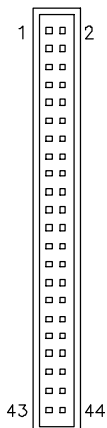
### FDD1: Floppy Drive Connector



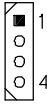
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

**IDE1, IDE2: EIDE Connectors****IDE1: Primary IDE Connector**

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

**IDE2: Secondary IDE Connector**

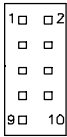
Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

**P1: AT Power Supply Connector**


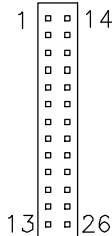
Pin #	Signal Name
1	+12V
2	Ground
3	Ground
4	+Vcc

**J1: LCD Inverter Output**


Pin #	Signal Name
1	+12V
2	Ground
3	BLT_ON
4	NC
5	Vcc

**J2: Digital I/O Connector (4 in, 4 out)**


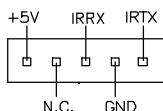
Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	Vcc
Out3	3	4	Out1
Out2	5	6	Out0
In3	7	8	In1
In2	9	10	In0

**J4: Parallel Port Connector**


Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

## J5: IrDA Connector

J5 is used for an optional IrDA connector for infrared wireless communication.



Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

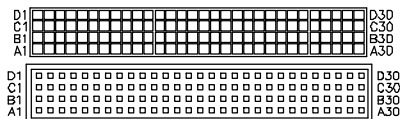
## J6: PC104+ Connector

### PC/104-Plus Bus Signal Assignments

J6				
Pin	A	B	C	D
1	GND/5.0V KEY <sup>2</sup>	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0*	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1*	AD15	+3.3V
9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3V	C/BE2*
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3*	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0*	GND	REQ1*	VI/O
24	GND	REQ2*	+5V	GNT0*
25	GNT1*	VI/O	GNT2*	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD*	+5V	RST*
29	+12V	INTA*	INTB*	INTC*
30	-12V	Reserved	Reserved	GND/3.3V KEY <sup>2</sup>

\* The shaded area denotes power or ground signals.

\* The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connected for GND for shielding.



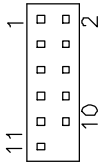
### J8, J7: 1st and 2nd Channel LVDS Connector (DF13-20)

Signal Name	Pin	Pin	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

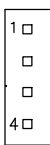
### PANEL ID TABLE

Panel ID	Resolution	Channel	Dithering
0	640x480	1	Enable
1	800x600	1	Enable
2	1024x768	1	Enable
3	1280x768	1	Enable
4	1280x1024	2	Enable
5	1400x1050	2	Enable
6	1600x1200	2	Enable
7	1280x800	1	Enable
8	800x480	1	Enable
9	1024x768	2	Enable
A	1024x768	1	Disable
B	1024x768	2	Disable
C	1280x768	1	Disable
D	1280x1024	2	Disable
E	1400x1050	2	Disable
F	1600x1200	2	Disable

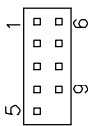
**J9: External Audio Connector**

	Signal Name	Pin #	Pin #	Signal Name
	LINEOUT_R	1	2	LINEOUT_L
	Ground	3	4	Ground
	LINEIN_R	5	6	LINEIN_L
	Ground	7	8	Ground
	Mic-In	9	10	VREFOUT
	Ground	11		

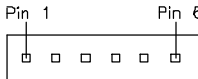
**J10: CD-in Connector**

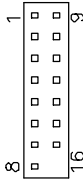
	Pin #	Signal Name
	1	Left
	2	Ground
	3	Ground
	4	Right

**J11: PS/2 Keyboard and Mouse Connector**

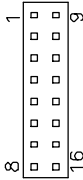
	Signal Name	Pin #	Pin #	Signal Name
	Ground	1	6	Ground
	Vcc	2	7	Vcc
	MS Data	3	8	KB Data
	MS CLK	4	9	KB CLK
	NC	5		

**J12: External Keyboard Connector**

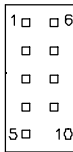
	Pin #	Signal Name
	1	Vcc
	2	To pin 9 of J11
	3	KB Clock
	4	To pin 8 of J11
	5	KB Data
	6	Ground

**J13: VGA CRT Connector**


Signal Name	Pin	Pin	Signal Name
R	1	9	+5V
G	2	10	GND
B	3	11	NC
NC	4	12	DDCDAT
GND	5	13	HSYNC
GND	6	14	VSYNC
GND	7	15	DDCCLK
GND	8	16	Protect pin

**J14: Gigabit LAN Connector (used with ID240)**


Signal Name	Pin	Pin	Signal Name
MDI0+	1	9	MDI0-
2.5V	2	10	GND
MDI1+	3	11	MDI1-
MDI2+	4	12	MDI2-
2.5V	5	13	2.5V
MDI3+	6	14	MDI3-
LINK_UP	7	15	ACT_LED
Link1000_LED	8	16	Link100_LED

**J15: 10/100 LAN Connector (used with ID240)**


Signal Name	Pin	Pin	Signal Name
Vcc	1	6	Link LED
RX+	2	7	RX-
ACT LED	3	8	Ground
VCC	4	9	Ground
TX+	5	10	TX-

**J16, J19, J20: USB Connectors**


Signal Name	Pin #	Pin #	Signal Name
Vcc	1	5	Ground
USB-	2	6	USB+
USB+	3	7	USB-
Ground	4	8	Vcc

**J17: Speaker**



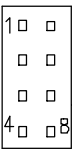
Pin #	Signal Name
1	Speaker out
2	NC
3	Ground
4	Vcc

**J18: External -5V, -12V Input Connector**



Pin #	Signal Name
1	Ground
2	-5V
3	Ground
4	-12V

**J21: System Function Connector**



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	PS_On
Power LED	3	4	Ground
HDD LED	5	6	HDD Active
Ground	7	8	Reset

Configuration:

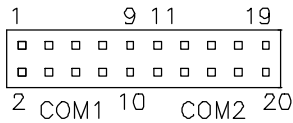
Pin 1/2: ATX power on switch connector

Pin 3/4: Power LED connector

Pin 5/6: HDD LED connector

Pin 7/8: Reset switch connector



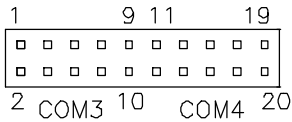
**J23: COM1 / COM2 Serial Ports**


Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	DSR, Data set ready
3	RXD, Receive data
4	RTS, Request to send
5	TXD, Transmit data
6	CTS, Clear to send
7	DTR, Data terminal ready
8	RI, Ring indicator
9	Ground
10	No Connect.

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	DSR	RTS-	NC
3	RX	TX+	DATA+
4	RTS	RTS+	NC
5	TX	RX+	NC
6	CTS	CTS+	NC
7	DTR	RX-	NC
8	RI	CTS-	NC
9	GND	GND	GND
10	NC	NC	NC

**J22: COM3 / COM4 Serial Ports**



Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	DSR, Data set ready
3	RXD, Receive data
4	RTS, Request to send
5	TXD, Transmit data
6	CTS, Clear to send
7	DTR, Data terminal ready
8	RI, Ring indicator
9	Ground
10	No Connect.

## **BIOS Setup**

This chapter describes the different settings available in the Award BIOS that comes with the motherboard. The topics covered in this chapter are as follows:

BIOS Introduction.....	24
BIOS Setup .....	24
Standard CMOS Setup.....	26
Advanced BIOS Features.....	29
Advanced Chipset Features .....	32
Integrated Peripherals .....	36
Power Management Setup .....	38
PNP/PCI Configurations .....	41
PC Health Status.....	42
Frequency/Voltage Control .....	43
Load Fail-Safe Defaults .....	44
Load Optimized Defaults.....	44
Set Supervisor/User Password.....	44
Save & Exit Setup .....	44
Exit Without Saving .....	44

## **BIOS Introduction**

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports VIA processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

## **BIOS Setup**

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

## Phoenix - Award Workstation BIOS CMOS Setup Utility

Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type...	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section, which displays information on the currently highlighted item in the list.

**Note:** *If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

**Warning:** *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

## Standard CMOS Setup

“Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Standard CMOS Features

Date (mm:dd:yy)	Wed, Feb 18 2004	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level
IDE Primary Master		
IDE Primary Slave		
IDE Secondary Master	None	Change the day, month, Year and century
IDE Secondary Slave		
Drive A	None	
Video	EGA/VGA	
Halt On	All, but keyboard	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

### Date

The date format is:

**Day :** Sun to Sat  
**Month :** 1 to 12  
**Date :** 1 to 31  
**Year :** 1999 to 2099

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

**Time**

The time format is:     **Hour**   :    **00 to 23**  
                              **Minute** :   **00 to 59**  
                              **Second** :   **00 to 59**

To set the time, highlight the “Time” field and use the <PgUp>/<PgDn> or +/- keys to set the current time.

**IDE Primary HDDs / IDE Secondary HDDs**

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select ‘Manual’ to define the drive information manually. You will be asked to enter the following items.

**CYLS :**            Number of cylinders  
**HEAD :**           Number of read/write heads  
**PRECOMP :**       Write precompensation  
**LANDZ :**          Landing zone  
**SECTOR :**        Number of sectors

The Access Mode selections are as follows:

                          Auto  
                          Normal (HD < 528MB)  
                          Large   (for MS-DOS only)  
                          LBA     (HD > 528MB and supports  
                                    Logical Block Addressing)

**Drive A**

These fields identify the types of floppy disk drive that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

**Video**

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

**Halt On**

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.



## Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Advanced BIOS Features

Hard Disk Boot Priority	Press Enter	ITEM HELP
Virus Warning	Disabled	Menu Level
CPU Internal Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	
Processor Number Feature	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up Numlock Status	On	
Typematic Rate Setting	Disabled	
Typematic Rate (chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
MPS Version Control for OS	1.4	
Video BIOS Shadow	Enabled	
Small Logo (EPA) Show	Enabled	

### Hard Disk Booty Priority

This item allows you to arrange the priority of the devices where the system boots from.

### Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

### CPU Internal /External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are *Enabled*.

### **CPU L2 Cache ECC Checking**

When enabled, it allows ECC checking of the CPU L2 cache. Enabling this feature is recommended because it will detect and correct single-bit errors in data stored in the L2 cache. It will also detect double-bit errors but not correct them.

### **Processor Number Feature**

This feature enables the reading of the CPU's serial number read by external programs. Enable this if your secure transactions require you to use such a feature.

### **Quick Power On Self Test**

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

### **First/Second/Third Boot Device**

These fields determine the drive that the system searches first for an operating system. The options available include *Floppy*, *LS/ZIP*, *HDD-0*, *SCSI*, *CDROM*, *HDD-1*, *HDD-2*, *HDD-3*, *LAN* and *Disable*.

### **Boot Other Device**

These fields allow the system to search for an operating system from other devices other than the ones selected in the First/Second/Third Boot Device.

### **Swap Floppy Drive**

This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled*.

### **Boot Up Floppy Seek**

This feature controls whether the BIOS checks for a floppy drive while booting up. If it cannot detect one (either due to improper configuration or its absence), it will flash an error message.

### **Boot Up NumLock Status**

This allows you to activate the NumLock function after you power up the system.

**Typematic Rate Setting**

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to *Disabled*.

**Typematic Rate (Chars/Sec)**

When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

**Typematic Delay (Msec)**

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to *250msec*.

**Security Option**

This field allows you to limit access to the System and Setup. The default value is *Setup*. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

**MPS Version Control for OS**

This option specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. The default setting is *1.4*.

**Video BIOS Shadow**

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

**Small Logo (EPA) Show**

This field enables the showing of the EPA logo located at the upper right of the screen during boot up.

## Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility  
Advanced Chipset Features

DRAM Clock / Drive Control	Press Enter	ITEM HELP
AGP & P2P Bridge Control	Press Enter	Menu Level
CPU & PCI Bus Control	Press Enter	
Memory Hole	Disabled	
System BIOS Cacheable	Enabled	
Video RAM Cacheable	Disabled	
Power Supply Type	AT	
Init Display First	PCI Slot	

Phoenix - AwardBIOS CMOS Setup Utility  
DRAM Clock/Driver Control

Current FSB Frequency		ITEM HELP
Current DRAM Frequency		Menu Level
DRAM Clock	By SPD	
DRAM Timing	Auto By SPD	
DRAM CAS Latency	2.5	
Bank Interleave	Disabled	
Precharge to Active (Trp)	4T	
Active to Precharge (Tras)	9T	
Active to CMD(Trcd)	4T	
REF to ACT/REF to REF(Trfc)	15T	
ACT(0) to ACT(1) TRRD)	3T	
DRAM Command Rate	2T Command	

Phoenix - AwardBIOS CMOS Setup Utility  
AGP & P2P Bridge Control

AGP Aperture Size	64M	ITEM HELP
AGP Mode	8X	Menu Level
AGP Driving Control	Auto	
AGP Driving Valve	DA	
AGP Fast Write	Enabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	
AGP 3.0 Calibration cycle	Disabled	
VGA Share Memory Size	128M	
Direct Frame Buffer	Enabled	
Select Display Device	CRT+LCD	
Panel Type	02	

Phoenix - AwardBIOS CMOS Setup Utility  
CPU & PCI Bus Control

PCI Master 0 WS Write	Enabled	ITEM HELP
PCI Delay Transaction	Enabled	Menu Level
Vlink mode selection	Mode 1	Menu Level
Vlink 8x Support	Enabled	

**DRAM Clock / Drive Control**

This field provides settings related to DRAM. The fields are listed below.

**Current FSB Frequency**

The default setting of the FSB Frequency is 100MHz.

**Current DRAM Frequency**

The default setting of the DRAM Frequency is 133MHz.

**DRAM Clock**

The default setting of the DRAM clock is SPD.

**DRAM Timing**

This option refers to the method by which the DRAM timing is selected. The default is By SPD.

**DRAM CAS Latency**

This is the period between when the chipset requests data from memory and when the memory is ready to send the data across the bus.

**Bank Interleave**

This decides how multiple memory modules communicate. It will only make a difference if you have more than one memory module.

**Precharge to Active(Trp)**

The amount of time from a bank precharge request to when it can be activated.

**Active to Precharge(Tras)**

The Active to Precharge timing controls the length of the delay between the activation and precharge commands – the length of time after activation can the access cycle be started again.

**Active to CMD(Trcd)**

This is the time between a row access request and a column access request.

**REF to ACT/REF to REF(Trfc)**

The default setting is 15T.

**ACT(0) to ACT(1) (TRRD)**

The default time setting is 3T..

**DRAM Command Rate**

The time to wait after a chip select before activate and read can be started.

**AGP & P2P Bridge Control**

The fields related to AGP & P2P Bridge Control are listed below.

**AGP Aperture Size**

The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The default setting is 128M.

**AGP3.0 Mode**

The default setting is 8X.

**AGP Driving Control**

This decides how multiple memory modules communicate. It will only make a difference if you have more than one memory module.

### **AGP Fast Write**

This accelerates memory write transactions from the chipset to the AGP device.

### **AGP Master 1 WS Write**

When enabled, this changes the default from a 2ws to a 1ws which will increase AGP Writing.

### **AGP Master 1 WS Read**

By default, the AGP busmastering device waits for at least 2 wait states before it starts a write transaction. When enable, this option sets the delay to 1 wait state.

### **AGP 3.0 Calibration cycle**

By default, this field is disabled.

### **VGA Share memory Size**

By default, this field is set to 64M.

### **Direct Frame Buffer**

By default, this field is Enabled.

### **Select Display Device**

By default, this field is set to CRT+LCD.

### **Panel Type**

By default, this field is set to 02.

## **CPU & PCI Bus Control**

The fields related to CPU & PCI Bus Control are listed below.

### **PCI Master 0 WS Write**

This determines whether the chipset inserts a delay before any writes from the PCI bus.

### **PCI Delay Transaction**

This is used to meet the latency of PCI cycles to and from the ISA bus.

### **Vlink mode selection**

The default is set to Mode 1.

### **Vlink 8X Support**

By default, this field is enabled.

## **Memory Hole**

In order to improve performance, certain space in memory can be reserved for ISA cards. By default, this field is disabled.

## **System BIOS Cacheable**

The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

## **Video RAM Cacheable**

The field allows the copying RAM of the video controller into RAM for faster access. By default, this field is disabled.

**Power Supply Type**

The default setting of the power supply type is *AT*.

**Init Display First**

This field allows the system to initialize first the VGA card on chip or the display on the PCI Slot. By default, the *PCI Slot* VGA is initialized first.

## Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Integrated Peripherals

VIA OnChip IDE Device	Press Enter	ITEM HELP
VIA OnChip PCI Device	Press Enter	Menu Level
SuperIO Device	Press Enter	
2nd SuperIO Device	Press Enter	

### VIA OnChip IDE Device

Upon pressing Enter on this field, another window appears. Below are the fields shown with their respective default settings:

- OnChip SATA – Enabled
- SATA Mode – RAID
- OnChip IDE Channel0 – Enabled
- OnChip IDE Channel1 – Enabled
- IDE Prefetch Mode – Enabled
- Primary Master PIO – Auto
- Primary Slave PIO – Auto
- Secondary Master PIO – Auto
- Secondary Slave PIO – Auto
- Primary Master UDMA – Auto
- Primary Slave UDMA – Auto
- Secondary Master UDMA – Auto
- Secondary Slave UDMA – Auto
- IDE HDD Block Mode – Enabled

### VIA OnChip PCI Device

Upon pressing Enter on this field, another window appears. Below are the fields shown with their respective default settings:

- VIA-3058 AC97 Audio – Auto
- VIA-3043 OnChip LAN – Enabled
- Onboard Lan Boot ROM – Disabled
- OnChip USB Controller –Enabled
- OnChip EHCI Controller – Enabled
- USB Emulation – OFF
- USB Keyboard Support – Disabled
- USB Mouse Support – Disabled



### **SuperIO Device**

Upon pressing Enter on this field, another window appears. Below are the fields shown with their respective default settings:

- Onboard FDC Controller – Disabled
- Onboard Serial Port 1 – 3F8/IRQ4
- Onboard Serial Port 2 – 2F8/IRQ3
- UART Mode Select – Normal
- Onboard Parallel port – 378/IRQ7
- Parallel Port Mode – SPP

### **2nd PCI Device**

Upon pressing Enter on this field, another window appears. Below are the fields shown with their respective default settings:

- Onboard Serial Port 3 – 3E8h
- Serial Port 3 Use IRQ – IRQ11
- Onboard Serial Port 4 – Disabled
- Serial Port 4 Use IRQ – IRQ10

***REMARKS: Please note that the onboard FDC controller and serial port 4, by default, are both DISABLED.***

## Power Management Setup

The Power Management Setup allows you to save energy of your system effectively.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Power Management Setup

ACPI Function	Disabled	ITEM HELP
Power Management Option	User Define	Menu Level
HDD Power Down	Disabled	
Suspend Mode	Disable	
Video Off Option	Suspend -> Off	
Video Off Method	V/H SYNC+Blank	
Modem Use IRQ	3	
Soft-Off by PWR-BTTN	Instant-Off	
Ac Loss Auto Restart	Off	
IRQ/Event Activity Detect	Press Enter	

### ACPI Function

Enable this function to support ACPI (Advance Configuration and Power Interface).

### Power Management Option

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management.
User Define	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

### HDD Power Down

When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

### Suspend Mode

BIOS will turn the HDD's motor off when system is in SUSPEND mode. By default, this field is disabled.

### Video Off Option

This field sets the video off option. By default, video goes into suspend state and then Off.

**Video Off Method**

This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning.
DPMS	Allows BIOS to control the video display.
Blank Screen	Writes blanks to the video buffer.

**Modem Use IRQ**

The default setting of this field is 3.

**Soft-Off by PWRBTN**

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

**AC Loss Auto Restart**

This field sets the auto restarting function of the system when there is AC power loss.

**IRQ/Event Activity Detect**

The items under this field are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

Phoenix - AwardBIOS CMOS Setup Utility  
IRQ/Event Activity Detect

		ITEM HELP
PS2KB Wakeup Select	Hot key	Menu Level
PS2KB Wakeup from S3/S4/S5	Disabled	
PS2MS Wakeup from S3/S4/S5	Disabled	
USB Resume from S3	Disabled	
VGA	OFF	
LPT & COM	LPT / COM	
HDD & FDD	ON	
PCI Master	OFF	
PowerOn by PCI Card	Disabled	
Modem Ring Resume	Disabled	
RTC Alarm Resume	Disabled	
IRQs Activity Monitoring	<b>Press Enter</b>	

**IRQ Activity Monitoring**

When you press Enter on this field, the following window appears.

Phoenix - AwardBIOS CMOS Setup Utility  
IRQs Activity Monitoring

		ITEM HELP
Primary INTR	ON	Menu Level
IRQ3 (COM2)	Disabled	
IRQ4 (COM1)	Enabled	
IRQ5 (LPT 2)	Enabled	
IRQ6 (Floppy Disk)	Enabled	
IRQ7 (LPT 1)	Enabled	
IRQ8 (RTC Alarm)	Disabled	
IRQ9 (IRQ2 Redir)	Disabled	
IRQ10 (Reserved)	Disabled	
IRQ11 (Reserved)	Disabled	
IRQ12 (PS/2 Mouse)	Enabled	
IRQ13 (Coprocessor)	Enabled	
IRQ14 (Hard Disk)	Enabled	
IRQ15 (Reserved)	Disabled	

## PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
PnP/PCI Configurations

PnP OS Installed	No	ITEM HELP
Reset Configuration Data	Disabled	Menu Level
Resources Controlled By	Auto (ESCD)	
IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	Default is Disabled.
Assign IRQ for VGA	Enabled	Select Enabled to reset
Assign IRQ for USB	Enabled	Extended System
		Configuration Data
		(ESCD) when you exit
		Setup if you have
		installed a new add-on
		and the system
		reconfiguration has
		caused such a serious
		conflict that the OS
		cannot boot

### PNP OS Installed

Enable the PNP OS Install option if it is supported by the operating system installed. The default value is *No*.

### Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is *Disabled*.

### Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically with the use of a use a PnP operating system such as Windows 95.

### PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

### Assign IRQ for VGA

This field enables the assigning of an IRQ for VGA.

### Assign IRQ for USB

This field enables the assigning of an IRQ for USB.

## PC Health Status

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
PC Health Status

		ITEM HELP
Thermal Duty Cycle	Disabled	
CPU Warning Temperature	Disabled	
Current System Temp.	39°C/102°F	
Current CPU Temp.	32°C/89°F	
Current CPU FAN Speed	0 RPM	
Current Chassis FAN Speed	0 RPM	
Vcore (V)	1.63V	
Vcc3(V)	3.37V	
+5V	5.05V	
+12V	12.09V	
-12V	-12.03V	
-5V	- 4.79V	
VBAT(V)	3.21V	
5VSB(V)	5.05V	
Shutdown Temperature	Disabled	
CPU Fan Failure Warning	Disabled	
Cha Fan Failure Warning	Disabled	

### Thermal Duty Cycle

By default, this field is disabled.

### CPU Warning Temperature

This field allows the user to set the temperature so that when the temperature is reached, the system sounds a warning. This function can help prevent damage to the system that is caused by overheating.

### Temperatures/Fan Speeds/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

### Shutdown Temperature

This field allows the user to set the temperature by which the system automatically shuts down once the threshold temperature is reached. This function can help prevent damage to the system that is caused by overheating.

### Fan Failure Warning

The fan failure warning feature applies to the CPU and chassis. When enabled, it can give a warning to protect the CPU and system from damage due to overheating.

## Frequency/Voltage Control

This section shows the user how to configure the processor frequency.

Phoenix - Award WorkstationBIOS CMOS Setup Utility  
Frequency/Voltage Control

VIA C3 Clock Ratio	Default	ITEM HELP
Auto Detect PCI/DIMM Clk	Disabled	Menu Level
Spread Spectrum	Disabled	

### VIA C3 Clock Ratio

This field will function only if the motherboard supports clock ratio to be adjusted.

### Auto Detect PCI/DIMM Clk

This field enables or disables the auto detection of the PCI/DIMM clock.

### Spread Spectrum

This field sets the value of the spread spectrum. The default setting is *Disabled*. This field is for CE testing use only.

### **Load Fail-Safe Defaults**

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

### **Load Optimized Defaults**

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

### **Set Supervisor/User Password**

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

### **Save & Exit Setup**

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

### **Exit Without Saving**

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.



## Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 98, Windows NT 4.0 and Windows 2000. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

VIA CN400 4 in 1 Driver Installation .....	46
Realtek AC' 97 Codec Audio Driver Installation .....	48
VIA VT8237 LAN Driver Installation .....	49
Realtek Gigabit LAN Driver Installation .....	49
VIA RAID Driver Installation .....	50
VIA USB 2.0 Driver Installation .....	52
VIA CN400 VGA Driver Installation .....	52

### **IMPORTANT NOTE:**

Please also install Serial ATA and RAID drivers with the included floppy disks.

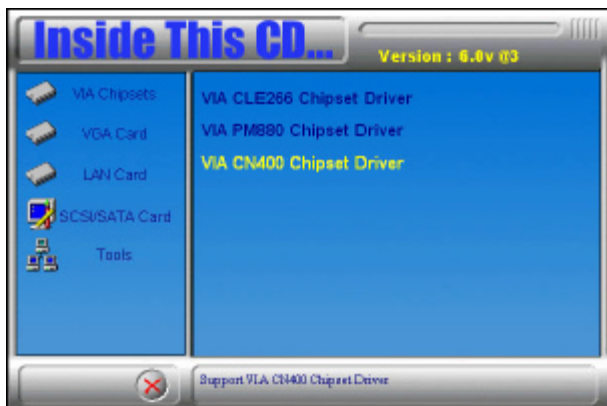
After installing your Windows operating system (Windows 98/98SE/ME/2000/XP), you must install first the Chipset Software Installation Utility before proceeding with the drivers installation.

## VIA CN400 4 in 1 Driver Installation

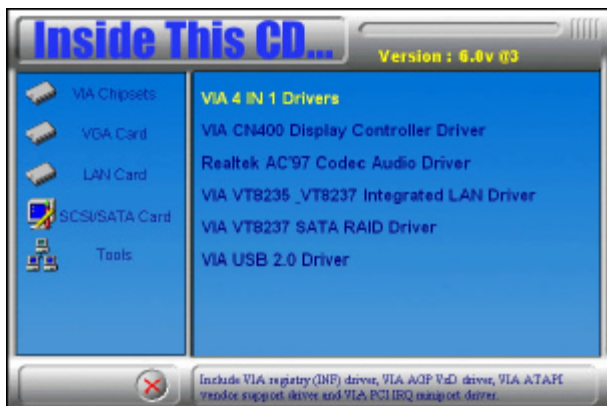
---

Follow the steps below to install the chipset drivers of the VIA CN400/CN333 chipset under Windows 98/98SE/ME/2000/XP.

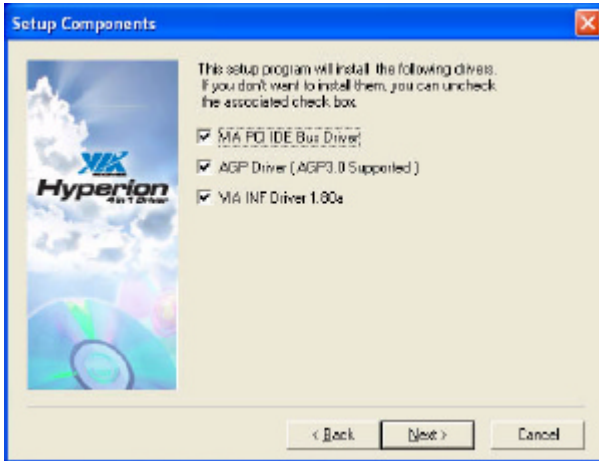
1. Insert the CD that comes with the motherboard and the screen below would appear. Click VIA CN400 Chipset Drivers.



2. Click on VIA 4 IN 1 Drivers.



3. Click Next when the welcome screen appears.
4. Click Next when the VIA Service Pack README screen appears.
5. Select Normal Installation and click Next.
6. In the Setup Component window, check all the items and click Next.



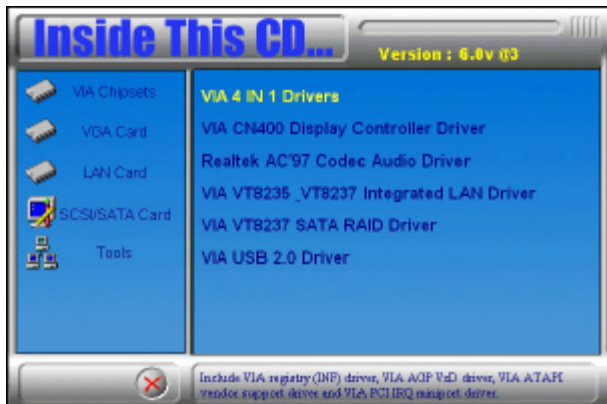
7. Click Next to install the VIA PCI IDE Bus Driver.
8. Click Next to install the VIA GART AGP Driver.
9. On the next window, click OK to restart the computer and for changes to take effect.

### Realtek AC'97 Codec Audio Driver Installation

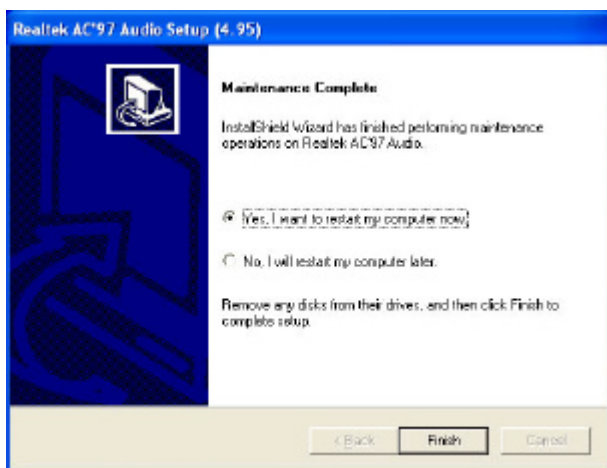
---

Follow the steps below to install the Realtek AC'97 Codec Audio Driver under Windows 98/98SE/ME/2000/XP.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click VIA CN400 Chipset Drivers.
2. Click on Realtek AC'97 Codec Audio Driver to start the installation.



3. To complete the installation process, click Next to restart the computer and for changes to take effect.

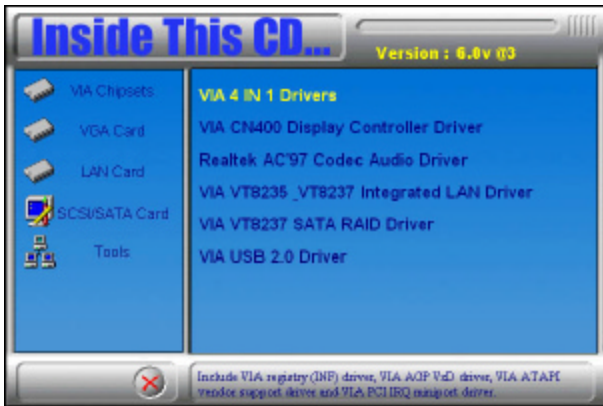


## **VIA VT8237 LAN Driver Installation**

---

Follow the steps below to install the Realtek AC'97 Codec Audio Driver under Windows 98/98SE/ME/2000/XP.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click VIA CN400 Chipset Drivers.
2. Click on VIA VT8235 VT8237 Integrated LAN Driver and the drivers will automatically be installed.



## **Realtek Gigabit LAN Driver Installation**

---

Follow the steps below to install the Realtek LAN Driver under Windows 98/98SE/ME/2000/XP.

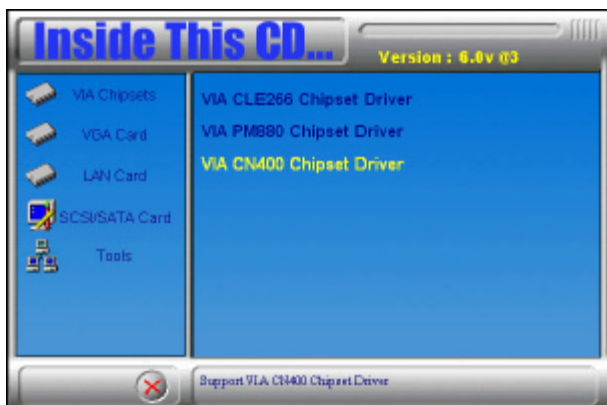
1. Insert the CD that comes with the motherboard and the screen below would appear. Click on LAN Card. On the next screen, click on Realtek Network Interface Controller Drivers to start the installation process.
2. When the welcome screen appears, click Next to continue.
3. On the next screen, click Finish to restart the computer.

### VIA RAID Driver Installation

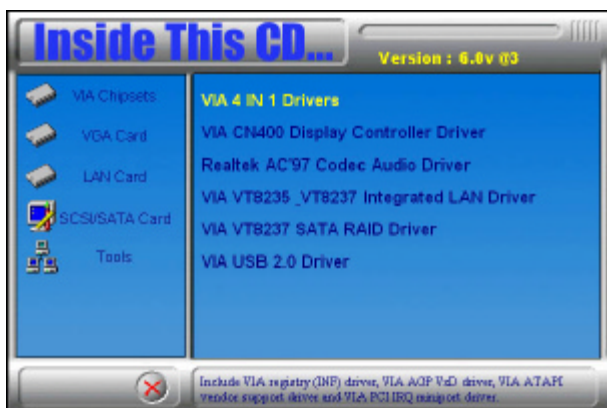
---

Follow the steps below to install the VIA RAID Driver under Windows 98/98SE/ME/2000/XP.

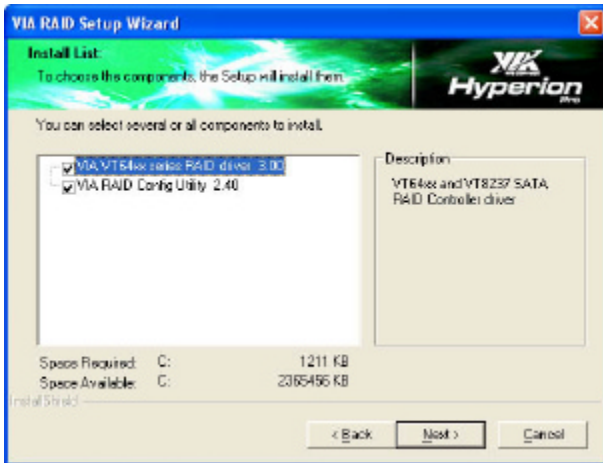
1. Insert the CD that comes with the motherboard and the screen below would appear. Click VIA CN400 Chipset Drivers.



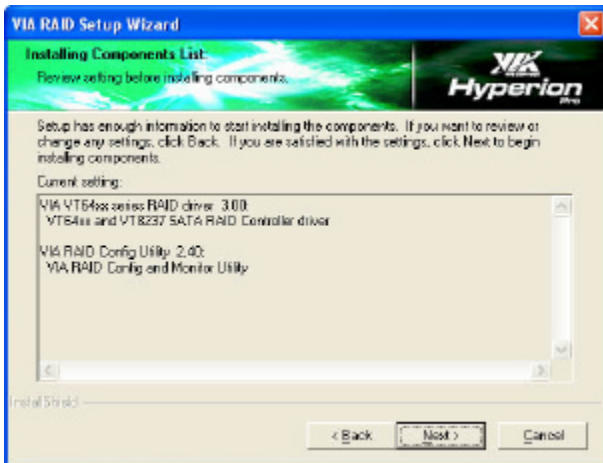
2. Click on VIA VT8237 SATA RAID Driver.



3. When the welcome screen appears, click Next.
4. When the VIA Software License Agreement screen appears, check the “I agree” checkbox and click Next.
5. Select all components and click Next.



6. The following screen shows you the status of the installation. Click Next to continue. When prompted, restart the computer for changes to take effect and complete the installation process.

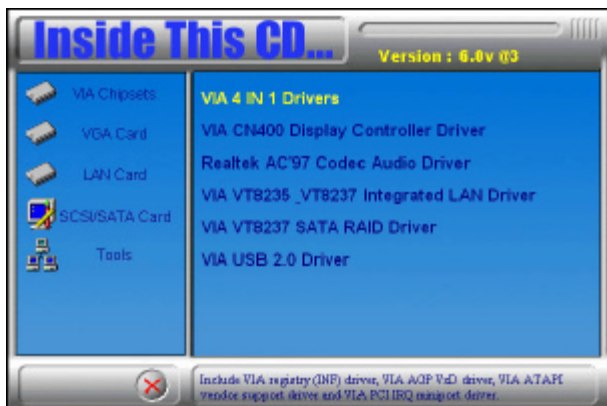


### VIA USB 2.0 Driver Installation

---

Follow the steps below to install the VIA USB 2.0 Driver under Windows 98/98SE/ME/2000/XP.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click VIA CN400 Chipset Drivers.
2. Click on VIA USB 2.0 Driver.



3. When the welcome screen appears, click Next.
4. Click Next to proceed with the installation.

### VIA CN400 VGA Driver Installation

---

Follow the steps below to install the VIA CN400 VGA Driver under Windows 98/98SE/ME/2000/XP.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click VIA CN400 Chipset Drivers.
2. Click on VIA CN400 Display Controller Driver to start the installation.
3. Click Finish to complete the installation.



## Appendix

### A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

## **B. Interrupt Request Lines (IRQ)**

---

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

<b>Level</b>	<b>Function</b>
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Serial Port 3
IRQ11	Serial Port 4
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

## C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

### SAMPLE CODE:

This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

Filename : Main.cpp

```
//=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#include <stdio.h>
#include <stdlib.h>
#include "W697HF.H"
//=====
int main (int argc, char *argv[]);
void copyright(void);
void EnableWDT(int);
void DisableWDT(void);
//=====
int main (int argc, char *argv[])
{
    unsigned char bBuf;
    unsigned char bTime;
    char **endptr;

    copyright();

    if (argc != 2)
    {
        printf(" Parameter incorrect!!\n");
        return 1;
    }

    if (Init_W697HF() == 0)
    {
        printf(" Winbond 83697HF is not detected, program abort.\n");
        return 1;
    }
    bTime = strtol (argv[1], endptr, 10);
    printf("System will reset after %d seconds\n", bTime);

    EnableWDT(bTime);

    return 0;
}
//=====
void copyright(void)
{
    printf("\n===== Winbond 697HF Watch Timer Tester (AUTO DETECT) =====\n")
           "      Usage : W697WD reset_time\n"
           "      Ex : W697WD 3 => reset system after 3 second\n"
           "           W697WD 0 => disable watch dog timer\n");
}
//=====
void EnableWDT(int interval)
```

```

{
    unsigned char bBuf;

    bBuf = Get_W697HF_Reg(0x29);
    bBuf &= (~0x60);
    bBuf |= 0x20;
    Set_W697HF_Reg(0x29, bBuf);
    //enable WDTO

    Set_W697HF_LD(0x08);
    //switch to logic device 8

    bBuf = Get_W697HF_Reg(0xF3);
    bBuf &= (~0x04);
    Set_W697HF_Reg( 0xF3, bBuf);
    //count mode is second

    Set_W697HF_Reg( 0xF4, interval);
    Set_W697HF_Reg( 0x30, 0x01);
    //set timer
    //enable timer
}
//=====
void DksableWDT(void)
{
    Set_W697HF_LD(0x08);
    Set_W697HF_Reg(0x30, 0x00);
    Set_W697HF_Reg(0xF4, 0x00);
    //switch to logic device 8
    //watchdog disabled
    //clear watchdog timer
}
//=====

Filename : W697hf.cpp
//=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#include "W697HF.H"
#include <dos.h>
//=====
unsigned int W697HF_BASE;
void Unlock_W697HF (void);
void Lock_W697HF (void);
//=====
unsigned int Init_W697HF(void)
{
    unsigned int result;
    unsigned char ucDid;

    W697HF_BASE = 0x2E;
    result = W697HF_BASE;

    ucDid = Get_W697HF_Reg(0x20);
    if ( ucDid == 0x60)
    {
        goto Init_Finish; }

    W697HF_BASE = 0x4E;
    result = W697HF_BASE;

    ucDid = Get_W697HF_Reg(0x20);
    if ( ucDid == 0x60)
    {
        goto Init_Finish; }

    W697HF_BASE = 0x00;
    result = W697HF_BASE;

Init_Finish:
    return (result);
}
//=====
void Unlock_W697HF (void)
{
    outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
    outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
}
//=====

```

```

void Lock_W697HF(void)
{
    outportb(W697HF_INDEX_PORT, W697HF_LOCK);
}
//=====
void Set_W697HF_LD( unsigned char LD)
{
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, W697HF_REG_LD);
    outportb(W697HF_DATA_PORT, LD);
    Lock_W697HF();
}
//=====
void Set_W697HF_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, REG);
    outportb(W697HF_DATA_PORT, DATA);
    Lock_W697HF();
}
//=====
unsigned char Get_W697HF_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, REG);
    Result = inportb(W697HF_DATA_PORT);
    Lock_W697HF();
    return Result;
}
//=====

Filename : W697hf.h
//=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#ifndef __W697HF_H
#define __W697HF_H                1
//=====
#define W697HF_INDEX_PORT        (W697HF_BASE)
#define W697HF_DATA_PORT         (W697HF_BASE+1)
//=====
#define W697HF_REG_LD             0x07
//=====
#define W697HF_UNLOCK             0x87
#define W697HF_LOCK               0xAA
//=====
unsigned int Init_W697HF(void);
void Set_W697HF_LD( unsigned char);
void Set_W697HF_Reg( unsigned char, unsigned char);
unsigned char Get_W697HF_Reg( unsigned char);
//=====
#endif // __W697HF_H

```

## D. Digital I/O Sample Code

---

Filename : Main.cpp

```
//-----  
//  
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY  
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE  
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR  
// PURPOSE.  
//  
//-----  
#include <dos.h>  
#include <conio.h>  
#include <stdio.h>  
#include <stdlib.h>  
#include "W697HF.H"  
//-----  
void ClrKbBuf(void);  
int main (int argc, char *argv[]);  
void SetDioInupt(unsigned char);  
unsigned char GetDioOutpt(void);  
  
//-----  
int main (int argc, char *argv[])  
{  
    if (Init_W697HF() == 0)  
    {  
        printf("Can not detect Winbond 83697HF, program abort.\n");  
        return(1);  
    }  
  
    printf("Current DIO input is 0x%X\n", GetDioOutpt());  
  
    printf("Set DIO output to high\n");  
    SetDioInupt(0x0F);  
  
    printf("Set DIO output to low\n");  
    SetDioInupt(0x00);  
  
    return 0;  
}  
//-----  
void SetDioInupt(unsigned char data)  
{  
    Set_W697HF_LD( 0x07);  
    Set_W697HF_Reg(0xF1, ((data & 0x0F) << 4));  
    //switch to logic device 7  
}  
//-----  
unsigned char GetDioOutpt(void)  
{  
    unsigned char result;  
  
    Set_W697HF_LD( 0x07);  
    result = Get_W697HF_Reg(0xF1, (data & 0x0F));  
    //switch to logic device 7  
    return (result);  
}  
//-----  
void ClrKbBuf(void)  
{  
    while(kbhit())  
    {  
        getch();  
    }  
}  
//-----  
  
Filename : W697hf.cpp  
//=====
```

```
//  
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY  
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
```

---

```

// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#include "W697HF.H"
#include <dos.h>
//=====
unsigned int W697HF_BASE;
void Unlock_W697HF (void);
void Lock_W697HF (void);
//=====
unsigned int Init_W697HF(void)
{
    unsigned int result;

    W697HF_BASE = 0x2E;
    result = W697HF_BASE;
    if (Get_W697HF_Reg(0x20) == 0x60)
    {
        goto Init_Finish;
    }

    W697HF_BASE = 0x4E;
    result = W697HF_BASE;
    if (Get_W697HF_Reg(0x20) == 0x60)
    {
        goto Init_Finish;
    }

    W697HF_BASE = 0x00;
    result = W697HF_BASE;

Init_Finish:
    return (result);
}
//=====
void Unlock_W697HF (void)
{
    outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
    outportb(W697HF_INDEX_PORT, W697HF_UNLOCK);
}
//=====
void Lock_W697HF (void)
{
    outportb(W697HF_INDEX_PORT, W697HF_LOCK);
}
//=====
void Set_W697HF_LD( unsigned char LD)
{
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, W697HF_REG_LD);
    outportb(W697HF_DATA_PORT, LD);
    Lock_W697HF();
}
//=====
void Set_W697HF_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, REG);
    outportb(W697HF_DATA_PORT, DATA);
    Lock_W697HF();
}
//=====
unsigned char Get_W697HF_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_W697HF();
    outportb(W697HF_INDEX_PORT, REG);
    Result = inportb(W697HF_DATA_PORT);
    Lock_W697HF();
    return Result;
}
//=====
Filename : W697hf.h
//=====

```

```
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#ifndef __W697HF_H
#define __W697HF_H 1
//=====
#define W697HF_INDEX_PORT (W697HF_BASE)
#define W697HF_DATA_PORT (W697HF_BASE+1)
//=====
#define W697HF_REG_LD 0x07
//=====
#define W697HF_UNLOCK 0x87
#define W697HF_LOCK 0xAA
//=====
unsigned int Init_W697HF(void);
void Set_W697HF_LD(unsigned char);
void Set_W697HF_Reg(unsigned char, unsigned char);
unsigned char Get_W697HF_Reg(unsigned char);
//=====
#endif //__W697HF_H
```